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UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,561	11/20/2003	Craig Hansen	43876-151	6094

7590 03/08/2006	**EXAMINER**
McDermott, Will & Emery	COLEMAN, ERIC
600 13th Street, N.W.	

ART UNIT	PAPER NUMBER
2183	

Washington, DC   20005-3096

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/716,561	HANSEN ET AL.
	Examiner	Art Unit
	Eric Coleman	2183

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.
2a) ☐ This action is **FINAL**.　　2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-26* is/are pending in the application.
　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) *1-26* is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
　　a) ☐ All　b) ☐ Some * c) ☐ None of:
　　　1. ☐ Certified copies of the priority documents have been received.
　　　2. ☐ Certified copies of the priority documents have been received in Application No. _____.
　　　3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 14-26 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 14-26 are directed to a method of providing data and memory capabilities in a programmable processor. The claims are to an instruction set that are a plurality of instructions that are for intended use. The mere providing of instructions does not provide any tangible result. These instructions are unexecuted and are merely abstract ideas with intended uses that may be provided for by bits of data. This does not provide for any tangible result and therefore these claims are not statutory. The instructions are merely an arrangement of data that is provided for by bits which is abstract, not tangible. The other operations in the claim merely provide intentions to manipulate or arrange the data or bits. These operations do not transform any article or physical object to different state or thing or provide any tangible result. (see Diehr, 450 US. At 187,209 USPQ at 8; Benson 409 US at 71-72, 175 USPQ at 676-77; AT&T 172 F.3d at 1358-59, 50 USPQ2d at 1452.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van

Hook (Patent No. 6,266,758) in view of Song (patent No 5,991,531).

Van Hook taught the invention substantially as claimed including a data

processing ("DP") system comprising(as per claims 1,14):

a) Data path (e.g., see fig. 3);

b) External interface (vector load/store unit) (302) operable to receive data from

an external source and communicate the received data over the data path (e.g., see

figs. 3,4);

c) Main memory (e.g., see fig. 3) and Data storage (212) ,RAM 210) (e.g., see

fig. 2);

d) Register file (204, 304) (e.g., see figs. 2,3) ;

e) Execution unit SIMD vector unit (e.g., see fig. 3);and

f) Aligned instruction operable to copy first data according to an aligned memory

address, first data having a data width, the data width specified as a fixed value by the

aligned instruction, the aligned instruction address being one of a plurality of memory

addresses regularly spaced at alignment boundaries separated by the data width(e.g.,

see figs. 8a, 8b,8c,8d,8e,8f,,8g,8h and col. 9, line 55-col. 11, line 58)[the opcode

specifies the aligned data width].

3.   Van Hook did not expressly detail a cache memory. However since Van Hook

taught a system that retrieved data and instructions from main memory which is

characteristically a slow memory one ordinary skill would have been motivated to

incorporate a cache to store data and instructions ahead of the time needed to provided

quicker access to data and instruction as was well known in the art at the time of the

claimed invention. On the other hand Song taught an instruction that bypasses a cache

and therefore this suggest the use of a cache (e.g., see col. 16, lines 1-13 of Song).

4.   Van Hook did not specifically detail an unaligned instruction. Song however

taught an unaligned instruction operable to copy second data according to an unaligned

memory address, the second data having the data width, the data width specified as a

fixed value by the unaligned instruction, the second data being permitted to cross the

alignment boundary of data width, the alignment memory address being a memory

address that is constrained to one of the plurality of memory addresses regularly

spaced at alignment boundaries separated by the data width (e.g., see figs. 4A, 4B,5

and col. 1, line 45-col. 2, line 43 and col. 3, lines 22-col. 4, line 11)[the opcode selects

one data width and when a mode bit is selected the width of the operation is changed

where 32 bit operations are combined to create a 64 bit operation and produce a 64 bit

result which crosses the 32 bit boundary].

5.   It would have been obvious to one of ordinary skill in the DP art to combine the

teachings of Van Hook and Song. Both references were directed toward processing of

data in a manner that copies bits to specified locations of source location to specified

bits in destination location. One of ordinary skill would have been motivated to

incorporated the Song teachings of emulating a 64 bit instruction using two 32 bit

instruction to provide increase flexibility in the processing of different widths of data.

6.   As per claim 2,3,15,16 Van Hook taught loading vectors from memory (e.g., see

col. 2, lines 46-53) and the use of load/store instructions that load or store 32-bit or

concatenated 64-bit data to/from memory (e.g., see col. 6, lines 24-col. 7, line 8) This

provides for load and store instructions aligned 32-bit data and unaligned 64 bit data in

operations in the combined system of Van Hook and Song.

7.   As per claims 4,7,8,9,10,17,20,21,22,23, Song taught operating on data that had

data width of 32 or 64 bits performing vector operations. Therefore since the as was

well known in the art the processors at the time of the claimed invention standard

processors operate on larger word widths as memories become larger which allow the

system to address larger numbers of locations of data in memory and this is increase by

a multiple of 2. Also with the motivation of using increased word widths one of ordinary

skill would have been able to take advantage of the larger word widths of memory.

Therefore one of ordinary skill would have been motivated to use operate on 128 bit

width data as the memories that could hold the corresponding number locations were

available and/or had larger width locations. In the 64 and 128 bit embodiments, the

memory address would have been separated by 64 and 128 bits respectively.

8.   As per claim 5,6,18,19, The Van Hook and Song references taught performing

vector operation of variable precision and differing length data (e.g., see col. 13, lines 7-

50, col. 3, lines 22-34 of Song). Van Hook also taught the use of 64 bit operations in

media signal processing (e.g., see col. 1, lines 17-29). Therefore one of ordinary skill

would have motivated to perform floating point operations and integer operations on the

combined system using the group operations taught by Van Hook and Song (e.g., see figs. 8a, 8b,8c,8d,8e,8f,,8g,8h and col. 9, line 55-col. 11, line 58).

9.   As per claim 11, 24, Van Hook taught that it was well known that when elements were not aligned as required for SIMD vector operation, the non-aligned vector processing have been reduced to scalar processing. That is, operations took place one element at a time instead of simultaneous multiple operations (e.g., see col. 2, lines 4-11). Consequently one of ordinary in the art performing SIMD instruction such as taught by Van Hook would have been motivated when unaligned data was encountered to generate an exception and then perform processing an element at a time or use the exception to align the data to a recognized boundary.

10.   As per claims 12, 13,25,26, Van Hook taught aligning data and performing SIMD operations (characteristically parallel operations on multiple data)(e.g., see col. 2, lines 30-53). As to performing two instructions in parallel Song taught this limitation (e.g., see figs. 4A, 4B, 5 and col. 1, line 45-col. 2, line 43 and col. 3, lines 22-col. 4, line 11).

Conclusion

11.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ackerman (patent No. 5,481,719) disclosed a exception handling method (e.g., see abstract).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Coleman whose telephone number is (571) 272-4163. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on (571) 272-4162. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EC

**ERIC COLEMAN
PRIMARY EXAMINER**